Claims

What is claimed is:

1. Process for back-surface grinding of wafers, comprising the following steps:

a) applying a film, which has a support layer and an adhesion layer, by means of the adhesion-layer side, to the wafer front surface, the film being applied to the wafer front surface by lamination, the adhesion layer matching semiconductor topography structures and/or contact bumps situated on the wafer surface, while the support layer, on the rear side, runs plane-parallel to the wafer surface;

b) carrying out a first photochemically initiated partial polymerization in the adhesion layer, with the result that the adhesion layer adopts an elastic behavior as a result of the first partial polymerization and the adhesion between adhesion layer and wafer surface is reinforced;

c) grinding the wafer back surface,

d) carrying out a second partial polymerization in the adhesion layer, with the result that the adhesion between the adhesion layer and the wafer surface is reduced; and

e) pulling the film off the wafer front surface.

2. Process according to Claim 1, wherein the wafer front surface is provided with semi-conductor structures.

3. Process according to Claim 1, wherein the wafer

front surface has contact bumps of a height of 150 - 250 µm and a diameter of 300 - 500 µm.

4. Process according to claim 1, wherein the second partial polymerization is thermally or photochemically initiated.

5. Process according to claim 1, wherein the support layer rests flat on a base during the back-surface grinding of the wafer.

6. Process according to claim 1, wherein the support layer includes prepolymers which are known per se, preferably polyolefins.

7. Process according to claim 1, wherein the thickness of the support layer is 80 - 200 µm.

8. Process according to claim 1, wherein the adhesion layer includes a thermally polymerizable prepolymer and a photochemically polymerizable prepolymer.

9. Process according to claim 1, wherein the adhesion layer includes two photochemically polymerizable prepolymers.

10. Process according to claim 1, wherein the adhesion layer includes a prepolymer which can be selectively polymerized by a combination of a thermally activatable initiator and a photochemically activatable initiator.

11. Process according to claim 1, wherein the adhesion

layer includes a prepolymer which can be selectively polymerized by a combination of two different photochemically activatable initiators.

12. Process according to claim 1, wherein the adhesion layer includes acrylates, polyurethanes, expoxides, polyesters, polyethers and/or derivatives or mixtures thereof as thermally and/or photochemically polymerizable prepolymers.

13. Process according to claim 1, wherein the adhesion layer includes multifunctional acrylates in combination with functional prepolymers as thermally and/or photochemically polymerizable prepolymers, polymers with different backbones, such as polyurethanes, epoxides, polyesters and/or polyethers or derivatives thereof being present as functional prepolymers and the acrylates having double bonds.

14. Process according to claim 1, wherein the adhesion layer contains peroxides, preferably benzoyl peroxide and/or di-tertbutyl peroxide, as thermal initiator(s).

15. Process according to claim 1, wherein the adhesion layer includes aromatic carbonyl compounds, which undergo a Norrish type 1 rearrangement, preferably benzoin, benzoin derivatives, benzil ketals, acetophenone derivatives and/or acylphosphine oxides or alpha-amino ketones, as photochemical initiator(s).

16. Process according to claim 1, wherein the photoinitiators can be activated at different

wavelengths.

17. Process according to claim 1, wherein the adhesion layer has a thickness of up to 500 µm, preferably 150 - 300 µm, more preferably 200 - 300 µm.